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Itinerary of Mr. G. C. Champion's Travels in Central America, 1879-1883.

BY G. C. CHAMPION.

The following itinerary of my travels in Central America (Guatemala and Panama), March 16, 1879-May 21, 1883, has been drawn up at the request of Dr. P. P. Calvert, of Philadelphia, for publication in ENTOMOLOGICAL NEWS.

It may, perhaps, be of interest to American, as well as to European, entomologists or to future travelers, pending the possible publication in the "Biologia" of a fuller description of the many places visited. In Guatemala both the Atlantic and Pacific slopes were investigated, as well as the central plateau, the larger volcanos, &c., the Atlantic slope proving to have an incomparably richer insect-fauna than the Pacific. In Panama (Chiriqui) the Pacific slope only was investigated, the Atlantic side being very inaccessible and having no villages or centres of population except along the coast or around the Laguna de Chiriqui. The journey to Central America was made to obtain material for the Biologia Centrali-Americana and under instructions from Messrs. Godman and Salvin.

1879. March 16-18. San José de Guatemala.* Sea coast, mangrove swamps, lagoons, etc.

March 19, 20. Traveling up to capital.

March 21-April 2. Guatemala city (about 4500 ft.). Open plains, intersected by deep barrancas (ravines). Scrubby oak and pine woods in places on hillsides.

April 3-5. Ciudad Vieja. The first capital of Guatemala, in the valley between the volcanos Agua and Fuego. Coffee plantations and cultivated ground.

April 6-8. Guatemala city.

April 9. Aceituno. Plantation near the capital.

April 10-16. Guatemala city.

April 17-May 12. Capetillo. Valley between the volcanos Agua and Fuego. Coffee and sugar cane plantations, with the forest-clad slopes of the Fuego adjacent.

May 13-June 22. Zapote (about 2000 ft.). On the forest-clad southern slope of the Volcan de Fuego.

June 24, 25. Antigua.

June 26-July 21. Dueñas (about 4500 ft.). Near Capetillo. Coffee and opuntia plantations adjacent to the Lake of Dueñas. Various excursions made from here to Calderas, on the upper eastern slope of the Volcan de Fuego, up to about 7500 ft. Pines on the higher ground.

July 22-Aug. 7. Guatemala city.

Aug. 8. Carrizal. Arid district with scrubby woods.

Aug. 9. Llano Grande (about 2600 ft.). Scrubby woods and cultivated ground.

Aug 10–Sept. 9. San Gerónimo, Baja Vera Paz (about 2950 ft.). East end of plain of Salama. Hot, dry region, with many cacti. Chuacus range of mountains adjacent. Lower slopes of latter clothed with pine forest, with forest of deciduous trees above.

[* The interested reader can easily follow Mr. Champion's itinerary on the map of Guatemala issued by the Bureau of American Republics, Washington, 1902. Scale 12 5 miles to 1 inch. Some account of his experiences, methods, etc., but unaccompanied by any itinerary, was published in the Entomologists' Monthly Magazine for 1884, under the title "Tropical Collecting."—EDS.]

Sugar cane and coffee plantations near village. Drainage to Atlantic. Headquarters for about one year. Many long excursions made from here to places on Atlantic slope.

Sept. 10. Santa Barbara (about 4450 ft.). Mountainous region of Chilasco, east of San Gerónimo. Scattered woods of Liquidambar, etc.

Sept. 11, 12. Santa Cruz (5500 ft.). Mountainous region of Chilasco, east of San Gerónimo. Scattered woods of Liquidambar, etc.

Sept. 13-Oct. 1. San Gerónimo.

Oct. 2-5. Purula (about 4000 ft.). Open ground with a humid virgin forest adjacent on mountains.

Oct. 6, 7. Sabo (2900 ft.). Clearing in dense humid forest.

Oct. 8-15. Panimá (1800 ft.). Hot, narrow valley of the Rio Sinanja, a tributary of the Polochic. Valley followed down to near Ribaco and upward towards Matanza.

Oct. 16. Purula.

Oct. 17. Cachil. Open arid mountain slopes, with agaves, palms, etc.

Oct. 18-Nov. 3. San Gerónimo.

Nov. 4-6. Tocoy (about 2000 ft.). Arid district on Zacapa road.

Nov. 7. El Jicaro. Village on eastern slope of Chuacus range. Scrubby woods, pines above.

Nov. 8-12. San Gerónimo.

Nov. 13, 14. Purula.

Nov. 15. San Miguel Tucuru (about 1500 ft.). Polochic valley. Mostly cultivated ground, cotton, maize, etc.

Nov. 16. La Tinta. Polochic valley. Tropical vegetation. Indigo formerly cultivated here, hence the name.

Nov. 17-23. Senahu (2800 ft.). Limestone mountains north of Polochic valley. Humid forests, cleared in places for coffee plantations. Long rainy season.

Nov. 24-30. San Juan (1800 ft.). Mountain slopes north of Polochic. Forest cleared for coffee plantations.

Dec. 1, 2. La Tinta.

Dec. 3-7. Tamahu, a few miles higher up the valley than Tucuru (about 2250 ft.). Mostly cultivated ground.

Dec. 8. Santa Rosa (about 4000 ft.).

Dec. 9-28. San Gerónimo.

Dec. 29. Tactic (4300 ft.). Scattered Liquidambar and and other trees. Forest all cleared to near mountain tops.

1880. Dec. 30-Jan. 2. Coban, Alta Vera Paz (about 3800 ft.). Humid region, rainy season sometimes continuing into February. Forest nearly all cleared to plant coffee, maize, etc.

Jan. 3. Tactic.

Jan. 4-6. San Gerónimo.

Jan. 7. Buenaventura.

Jan. 8-12. Guatemala city.

Jan. 13. Lake of Amatitlan (about 3450 ft.).

Jan. 14-18. Guatemala city.

Jan. 19. Buenaventura.

Jan. 20-25. San Gerónimo.

Jan. 26. Santa Rosa.

Jan. 27-Feb. 1. San Joaquin, Alta Vera Paz (about 3200 ft.). Pine-clad, arid mountain slopes. Rio Chisoy below. About the northern limit of the arid region of the central plateau.

Feb. 2. San Cristobal (4250 feet). Cultivated ground adjacent to the Lake of San Cristobal.

Feb. 3-5. Balheu (Valeu) (3850 ft.). Pine-clad mountain slopes.

Feb. 6-10. Coban.

Feb. 11. Chiacam (2400 ft.). Coffee plantations and scrubby woods.

Feb. 12. San Agustin Lanquin (1000 ft.). Limestone formation. Second growth woods; forest all cleared.

Rio Cahabon, a large tributary of the Polochic, adjacent.

Feb. 13-23. Cahabon (800 ft.). Second growth woods, forest all cleared near village. Large Indian population.

Feb. 24-28. Lanquin. The large limestone cave visited. The Rio Cahabon, a broad stream, issues from its mouth.

Feb. 29-March 6. Chiacam.

March 7-9. Coban.

March 10-20. Cubilguitz (1050 ft.). Limestone region, with humid forest on hills. Broad valleys with scattered trees. The Rio Dolores reached, but not crossed. On main road from Coban to Peten.

March 21. Satchicha (2000 ft.)

March 22-24. Coban.

March 25. Tactic.

March 26-April 13. San Gerónimo.

April 14-23. Purula.

April 24-28. Panima.

April 29-May 2. Sabo.

May 3. San Miguel Tucuru.

May 4-12. Chacoj, near Chamiquin, sometimes called La Hamaca (from the old rope bridge over the Polochic) (about 500 ft.). Tropical forest with many palms.

May 13-18. Teleman, on the Rio Polochic. Fine tropical forests swarming with Culicidæ. Unhealthy district.

May 19-22. Panzos, on the Rio Polochic. Fine tropical forests swarming with Culicidæ. Willows on river bank. Unhealthy district.

May 23. Danta, on northern shore of the Lake of Yzabal.

May 24. Traveling up river Polochic.

May 25-June 2. Panzos.

June 3-14. Senahu, traveling up from Panzos by way of Trece Aguas.

June 15-21. San Juan.
June 22, 23. Chacoj.
June 24. San Miguel Tucuru.
June 25-27. Purula.
June 28-July 26. San Gerónimo.
July 27. Rabinal (2850 ft.). Dry region, with scrubby woods, cacti, etc.
July 28. Cubulco (2900 ft.).
July 29. Joyabaj (4300 ft.). Open mountainous region, intersected by deep barrancas. Pines and oaks on slopes. Central plateau becoming higher westward.
July 30. Santo Tomas Chiché (6100 ft.). Los Altos region.
July 31-Aug. 5. Chimente, Quiché mountains (7600 ft.). Oaks, pine, alder, etc., on slopes. Potatoes and maize cultivated.
Aug. 6. Totonicapam (7900 ft.). Pine-clad slopes.
Aug. 7. Chevuc (9900 ft.). Pine woods.
Aug. 8. Los Encuentros (8400 ft.).
Aug. 9, 10. Desconsuelo (Solchicha) (about 10,500 ft.). Pine forests. Very bleak situation. Carriage road from Guatemala city to Quezaltenango passes this place following the summit of the highest portion of the Cordillera. Potatoes only cultivated at this elevation.
Aug. 11-15. Pachoc (9200 ft.). Pine woods.
Aug. 16. Totonicapam.
Aug. 17-19. Quezaltenango (7600 ft.). Cultivated ground mostly.
Aug. 20-Sept. 9. Finca of Las Nubes, on the Pacific slope of the Cerro Zunil, above Mazatenango (4050 ft.). Coffee plantations, with dense forest above.
Sept. 10-23. San Isidro (1600 ft.). Pacific slope. Second growth woods, cleared in places for coffee and cacao plantations.
Sept. 24. Retalhuleu (950 ft.). Pacific slope. Second growth woods.
Sept. 25-Oct. 7. Las Mercedes (3200 ft.). Pacific slope.

Immense coffee plantations in this Costa Cuca district. Nearly all the original forest cleared.

Oct. 8-17. El Reposo (800 ft.). Low country near Pacific. Mostly second growth, but some forest in vicinity.

Oct. 18, 19. Paraiso (300 ft.). Near Pacific. Scrubby woods, bamboos, etc.

Oct. 20-22. Champerico. Sea coast.

Oct. 23. El Reposo.

Oct. 24-26. Las Mercedes.

Oct. 27-28. Coatepeque (1250 ft.). Mostly cultivated ground.

Oct. 29. Rio Naranjo (450 ft.). Second growth woods. Mexican frontier adjacent.

Oct. 30-Nov. 3. Finca La Union (2250 ft.). El Tumbador district, department of San Marcos. Coffee plantations and second growth woods.

Nov. 4-7. Finca La Carolina (2600 ft.). Tumbador district, overlooking Mexican coast.

Nov. 8. La Union.

Nov. 9. Rio Naranjo.

Nov. 10. Coatepeque.

Nov. 11-14. Las Mercedes.

Nov. 15. San Martin, near Ostuncalco (7400 ft.). Scattered trees, ground mostly cultivated.

Nov. 16-18. Quezaltenango. Cerro Quemado visited.

Nov. 19-Dec. 14. Las Nubes (Cerro Zunil).

Dec. 15. San Isidro.

Dec. 16-26. San Agustin (2250 ft.). Pacific slope of the Volcan de Atitlan. Second growth woods, coffee plantations, etc.

Dec. 27-29. San Lucas Toliman (4900 ft.). Oak woods, etc., around the lake of Atitlan. Pampojilaj visited and lake crossed to northern side.

Dec. 30. Panajachel (4900 ft.). Similar ground.

Dec. 31. San Lucas Toliman.

1881. Jan. 1. Godines (6900 ft.). Arid district above the precipitous slopes of the Volcan de Atitlan.

Jan. 2. Chimaltenango (5650 ft.). District cultivated with cereals.

Jan. 3-11. Guatemala city.

Jan. 12. Antigua.

Jan. 13. Volcan de Agua (about 13,000 ft.) ascended. Scattered pines to near summit, deciduous trees up to about 9000 ft.

Jan. 14. Antigua.

Jan. 15-Feb. 3. Pantaleon (1700 ft.). Pacific slope. Sugar-cane fields and second growth (rastrojo).

Feb. 4-14. Mirandilla (1700 ft.). Similar ground.

Feb. 15. Escuintla.

Feb. 16-18. Torola (1000. ft). Scattered patches of forest.

Feb. 19-28. Paso Antonio (400 ft.). Open savanas, with scattered crescentia and other trees, near Pacific. Lagoons here adjacent to the Rio Michotoya drained and used for pasturing in dry season.

March 1-3. Torola.

March 4. Savana Grande, near the Rio Maria Linda (about 1150 ft.). Scrubby woods and cultivated ground.

March 5. La Gavita (La Gavia) (1700 ft.). Similar ground.

March 6, 7. Brito.

March 8-16. Torola. District swarming with ticks in dry season.

March 17-April 3. Guatemala city.

April 4, 5. Escuintla.

April 6, 7. San José de Guatemala. Left by steamer on 7th en route for Panama.

April 9. La Union, Salvador. Landed for a few hours.

April 10. Corinto, Nicaragua. Landed for a few hours.

April 12. Punta Arenas, Costa Rica. Landed for a few hours.

April 17-20. Panama city. Left on 20th by steamer for Chiriqui.

April 22-30. David. Principal town of Chiriqui. Open

savanas, with scattered, leathery-leaved, deciduous trees. Denser growth by river side and on hills adjacent.

May 1-27. Finca Nance Bonito (about 2800 ft.). Southern slope of Volcan de Chiriqui. Plenty of forest, cleared in places for coffee plantations, a fine palm locally abundant. Savana region ascending to about 2000 ft. Coniferæ altogether wanting in the district, probably not reaching south of Nicaragua.

May 28-June 25. Las Potrerillas (El Banco). Similar ground. Not far from Nance Bonito.

June 26-July 13. David.

July 14-Aug. 1. Finca La Elvira. Similar to Nance Bonito.

Aug. 2-8. Las Potrerillas.

Aug. 9-11 Boquete (3550 ft.). Southeastern slope of Volcan de Chiriqui.

Aug. 12-20. La Caldera (1500 ft.). Savana region, with scattered trees. On road from David to Atlantic coast.

Aug. 21-Sept. 27. Las Potrerillas.

Sept. 28-Oct. 20. David.

Oct. 21-Nov. 28. Bugaba (1000 ft.). Fine forests here, extending into Costa Rica; eastward and southward savanas, with scattered trees. Rio Ascaria and Rio Chiriqui Viejo descending through forest country. Sugar cane and coffee cultivated.

Nov. 29. Jugales (2500 ft.).

Nov. 30-Dec. 10. Potrero del Volcan (4000 ft.). Savanas ascending up to 6000 ft. to the precipitous western slope of the Volcan de Chiriqui (11,000 ft.). Dense forests westward and southward. Lagoons in forest, through which passes the Rio Chiriqui Viejo. Uninhabited district, in which large numbers of cattle are pastured.

Dec. 11, 12. Bugaba.

Dec. 13-26. David.

1882. Dec. 27-Feb. 2. Bugaba.

Feb. 3-5. Camaron (1750 ft.). Milpas (maize fields) in forest clearings, on Costa Rican road.
Feb. 6-March 15. Bugaba.
March 16-21. Las Potrerillas.
March 22-April 10. Bugaba.
April 11-13. David.
April 14-18. Bugaba.
April 19-29. Potrero del Volcan.
April 30-May 29. Bugaba.
May 30-June 5. Las Potrerillas.
June 6-8. Slope of the Volcan de Chiriqui (5500 ft.). Staying in hut erected by orchid-collectors in dense forest. Ascended to 8000 ft., by tracks made by tapirs through the dense undergrowth of bamboo to summit of ridge. Further progress stopped by an immense ravine, beyond which the upper part of the volcano could be seen. No water could be found near hut, and a longer stay therefore not possible.
June 9-12. Las Potrerillas.
June 13, 14. Finca Nance Bonito.
June 15-July 3. Bugaba.
July 4. Jugales.
July 5-7. Potrero del Volcan.
July 18-Aug. 15. Bugaba.
Aug. 16-19. David.
Aug. 20-28. Bugaba.
Aug. 29-30. Divala (Vivala) (350 ft.). Savanas, with the Rio Chiriqui Viejo adjacent. Fine tropical forest, with many palms, westward. A road into Costa Rica passes this place, not many miles from the Pacific. Eastward, on the savana, is the old capital of the district, Alanje.
Aug. 31. Mosque (700 ft.).
Sept. 1-Nov. 30. Bugaba.
Dec. 1-3. David.
Dec. 4-27. Bugaba.
Dec. 28-30. David.
Dec. 31. Chorcha (300 ft.). Dense forest, descending

down to coast, interrupting the continuity of the large savanas bordering the Pacific.

1883. Jan. 1. San Lorenzo (200 ft.). Savanas, with woods here and there.

Jan. 2, 3. Los Remedios. Similar country near coast.

Jan. 4-10. Tolé (1150 ft.). Similar country. Excursions made from here to various places on slopes of Cordillera.

Jan. 11. Cerro Algodon (2000 ft.).

Jan. 12-17. Peña Blanca (3000 ft.). Very broken open country in vicinity of the Peña (Bluff). Slopes above covered with forest. Ascended to 5500 ft. Indians from distant places on Atlantic slope assemble in Cordillera near here annually.

Jan. 18. Cerro Algodon.

Jan. 19-22. Tolé.

Jan. 23-28. Nancito (800 ft.)

Jan. 29. Los Remedios.

Jan. 30-Feb. 3. San Feliz (650 ft.). Savanas, with patches of wood. Village near the borders of the department of Veraguas, and not very far distant from the chief town, Santiago.

Feb. 4. 5. La Isleta. Adjacent to the Rio Fonseca.

Feb. 6, 7. Caña Fistula (650 ft.). Near the Montaña de Chorcha.

Feb. 8-10. David.

Feb. 11-March 3. Bugaba.

March 4-9. David.

March 10, 11. Bugaba.

March 12, 13. David.

March 14. Boquita. On way down to coast.

March 15-17. Boca Chica. Near coast.

March 18-24. En route to Panama in small coasting vessel.

March 25, 26. Panama.

March 27. Colon (Aspinwall).

March 28-April 2. Panama.

April 3-27. San Miguel, King Island (Isla del Rey),

Pearl Islands. Scrubby woods much cleared in places to plant yams, etc. Coast fringed with mangroves and coco palms. Darien coast visible from San Miguel.

April 28, 29. On way back to Panama in small boat.

April 30. Panama.

May 1-17. Taboga Island, bay of Panama. Rocky ground ascending to about 800 feet with small streams.

May 18-21. Panama.

Elevations approximate only, taken from an uncorrected aneroid barometer. Probably too low in many cases.

Two new Species of Crambus and a new variety of Haematopsis grataria Fabricius.

By FRANK HAIMBACH, Philadelphia, Pa.

C. placidellus n. sp.

Expanse of wings, 16 mm.—Head and thorax above, white. Palpi whitish ochreous, pale cinereous on the outside. Fore-wings ochroleucus, whitish towards the base, sprinkled with dark brown atoms between the base and subterminal line, these atoms being most numerous between the median and subterminal lines; a light brown median line, starting from the middle of the costa, bent outwardly and running to beyond the middle of the hind margin; the subterminal line is whitish, edged on both sides with the same shade of light brown as the median line, with which it runs nearly parallel, being farthest apart at the interior margin; the subterminal space has the veins marked with faint whitish lines, and a row of black spots along the terminal line. Fringes metallic cinereous, with a fuscous line running nearly parallel with, and about one-third from the terminal line. Hind-wings of the same color as the fore-wings, but somewhat lighter; fringe whitish.

Described from three specimens taken at Wenonah, N. J., July 27, 1905, July 15, 1906, and at Philadelphia, Pa., July 6, 1905.

C. daeckellus n. sp.

Expanse of wings, 27-31 mm.—Head and palpi ochreous on top, brownish on the sides, thorax dark brown, pale ochreous through the centre vertically; fore-wings fusco-ferruginous, with a broad silvery

white stripe starting from the base near the costa, tapering acutely outwardly, and ending in a point; a tooth on the costal side near the centre of the stripe, and another below, which meets a fuscous line running from near the base to the terminal line; parallel with this line are two shorter metallic lines, above which, between veins 4 to 6, is a white stripe to the subterminal line; subterminal line silvery, bordered with white on the costa, and forming an obtuse angle at its first third, then running nearly straight to vein 2, where it forms another slight angle interiorly. The hind margin has a white stripe from the base nearly to the subterminal line. Upon the apex is a white triangle with a brown triangle above it. The terminal line is dark brown at the apex and a black spot on each of veins 2, 3, 4, 5 and 6. Fringe white at the apex, below that greyish metallic. Hind-wings and abdomen whitish to pale fuscous; fringe white.

Described from three specimens taken by Mr. E. Daecke at Brown's Mills Junction, N. J., May 30 and June 17, 1906, and at Da Costa, N. J., June 3, 1906, and one specimen taken by Mr. P. Laurent at Clementon, N. J., May 9. Named in honor of Mr. E. Daecke, of Philadelphia.

Hæmatopsis grataria annettearia.

Body of the same color (ochreous-yellow) as the typical specimens; fore-wings entirely pink, except at the costa, where there is a slight suggestion of yellow; the discal dot is a shade darker than the rest of the wing. Hind-wings of the same color as the fore-wings, but in some of the specimens the ochreous color shows through at about two-thirds from the base, through the centre of which the outer band can be indistinctly located, and from either side of this band the yellow blends gradually with the pink. Discal spot also visible, under side of wings suffused with pink as above, though not so markedly.

Described from eleven specimens taken at Cincinnati, Ohio, for several successive years, by Miss Annette F. Braun, for whom it gives me great pleasure to name this beautiful variety.

ANOTHER *Thecla* tangle.—Having had occasion to study some theclas for Mr. H. H. Brehme I came to the conclusion that *Thecla henrici* Grote and Robinson is a pure synonym of *irus* Godart. Grote and Robinson give as localities for *henrici* "Atlantic District. (Maine! to Pennsylvania!)"

"This species is intermediate between *Thecla augustus* Kirby (*T. angustinus* Westw.) and *Thecla irus*, as illustrated by Boisduval and Le Conte." The figure by Bd. and Lec. is large and crude, but represents the species found south and also from Maine to Pennsylvania. *Arsace* in the same species showing a light colored discal area, not uncommon in the species. I believe *henrici* was described because it did not fit the figure of *irus* Bd. Lec.—HENRY SKINNER.

A New Bee of the Genus Crocisa.

By T. D. A. Cockerell.

Crocisa beatissima n. sp.

♀. Length about 11 mm.; black with blue markings. Superficially similar to *C. cæruleifrons* Kirby (*quartinæ* Gribodo), but differing as follows: markings of thorax and abdomen turquoise-blue, bright but *not shining;* hair of face white with a faint bluish tint; ocelli larger; scutellum (which is without spots) with the hind margin broad W-shaped, not ⌒⌒-shaped; blue mark on each side of first abdominal segment like a large L placed sideways; the end of its foot with a large cuneiform appendage directed mesad, the point where the black invades the blue laterally being broadly rounded; hind tibiæ with the basal two-fifths bluish-white; basal joint of tarsi white outside.

Hab.—Adelaide, Australia, Junė, 1897. Received from the British Museum; collector unknown to me.

The Australian species of *Crocisa* with blue or bluish spots may be separated as follows:

At least some of the abdominal segments 4-spotted . . . . . 1.
None of the abdominal segments 4-spotted, the lateral marks being undivided . . . . . 2.
1. Margin of scutellum ⌒⌒-like . . . . . **lamprosoma** Boisduval.
Margin of scutellum W-like . . . . . **turneri** Friese.
2. First abdominal segment covered with blue pile, except a narrow inferior margin . . . . . **novæ-hollandiæ** Lepel.
First abdominal segment with an entire basal blue band; margin of scutellum W-like; blue markings shining . . . **nitidula** Fabr.
Abdominal bands all interrupted in the middle . . . . . 3.
3. Blue markings shiny; margin of scutellum ⌒⌒-like . . . . . 4.
Blue markings not shiny; margin of scutellum W-like . . . . . 5.
4. Hair on middle of occiput black with white on each side; apex of male abdomen more narrowly truncate . **cæruleifrons** W. F. Kirby.
Occiput with a complete conspicuous fringe of white hair; apex of male abdomen more broadly truncate: size smaller, not over 9 mm . . . . . **darwini** Ckll.
5. Large, about 15 mm.; markings of abdomen pale blue . . **tincta** Ckll.
Smaller, about 11 mm.; markings of abdomen bright blue. **beatissima** Ckll.

C. novæ-hollandiæ Lep. was placed by F. Smith, in 1854, as a synonym of *lamprosoma*, and this has been uncritically followed by later anthors. It may also be remarked that *C. emarginata* Lep. (type locality Port Pralin, New Ireland) is a species with shining blue markings, and appears to have been wrongly interpreted by Bingham and Friese.

The Identity of Thecla calanus and edwardsi.

By Henry Skinner.

Some time ago Mr. Edward D. Keith, of Providence, R. I., sent me some butterflies to name, and among them were some Theclas which I believe I determined to be *calanus*. Mr. Keith said he thought they were *edwardsi*, and this led me to investigate these two so-called species. In my collection I have my specimens named, as near as may be, in accordance with the literature and lists, and, as occasion or interest in special ones demand, I try to get them nearer to nature. To elucidate these problems we need large series of specimens with accurate data. I am indebted to Dr. James Fletcher for specimens of *edwardsi* from places in Canada and to Mr. H. H. Brehme for a number of *calanus* from New Jersey. In all I had before me 73 specimens, and, assuming some light colored ones from London and Toronto, Canada, were *edwardsi*, I divided the lot on the basis of color—dark ones as *calanus* and light ones as *edwardsi*. This gave 45 *calanus*, 27 ♂ and 18 ♀, and 28 *edwardsi*, 18 ♂ and 10 ♀. The brick-red spot at anal angle of secondaries above is not usually present. Three ♂ and 5 ♀ *calanus* have it, and 6 ♂ and 5 ♀ *edwardsi*. The color of the wings in the lots provisionally divided into *edwardsi* and *calanus* varies among the individuals. The extra-mesial band on the primaries below has been supposed by Mr. S. H. Scudder* to supply the character by which the two can be separated. In about 40 *calanus* this band consists of a dark line (slightly darker than ground color of wing) with outer edge narrowly white. This may be said to be divided into nearly quadrate spots by the nerves. In five specimens these spots become more or less oblong. In *edwardsi* 21 are quadrate and 7 oblong. A typical specimen of either *calanus* or *edwardsi* has a lunate red spot on secondaries below, and I find in some cases such may extend along the marginal band until there are four. The little patch of red on inner margin of secondaries below may be present or absent, and has no significance. The mesial band of primaries is variable, and I see absolutely no differential characters in it. The distribution of a species is

* Proc. Boston Soc. Nat. Hist., xiii, 272, 1870,

always interesting and instructive, and I therefore give the localities of the specimens and dates of capture so far as they exist on the pin labels.

Calanus. Nashville, Tenn., vi, 8; Beulah, Manitoba, vii, 16; vii, 28; Ohio; Runnels Co., Tex., v, 10; Wilmington, N. C., vi, 5; Philadelphia, Pa., vi, 10; viii, 24; Lake George, Fla.; Colorado; Newark, N. J., vii, 4; Elmwood, R. I., viii, 8; Jacksonville, Fla., v, 5; Atlanta, Ga.; Toronto, Ont., vi, 20; vii, 9; Beulah, New Mex., vii, 16.

Edwardsi. Minneapolis, Minn., vii, 8; Iowa; Toronto, Ont., vii, 9; vii, 23; Platte Canyon, Colo., vi, 23; Canadensis, Pike Co., Pa., viii, 12; London, Ont.; Chicago, Ill., vi, 4; Round Mountain, Blanco Co., Tex., v, 17. The distribution does not show anything conclusive. Among the lot sent by Dr. Fletcher are dark specimens taken at Toronto by Arthur Gibson on same dates as light ones. Moreover, most of the Canadian specimens are somewhat old and flown, and would therefore be lighter in color. The specimens exhibit the usual variation in size found in all butterflies. My conclusions are that under the names *calanus* and *edwardsi* we have but one species. My division into dark specimens (*calanus*) and light specimens (*edwardsi*) was for purposes of study. For sake of brevity I have not gone into the general synonymy of the names treated.

Notes on American Hemiptera.

By E. Bergroth, M.D., Duluth, Minn.

III.—The Acanthosomatinæ of North America.*

In his "Check-list" (1886) Uhler enumerates five North American species of this subfamily. By placing three of them as synonyms Van Duzee has reduced this number to two in his "Annotated List of the Pentatomidæ Recorded from America North of Mexico" (1904), but he describes one new species and one new variety. All the North American species are placed in the genus *Acanthosoma* by these authors. Since my moving over to this side of the Atlantic, I have had occasion to examine most of the American forms of this group, and find

* Nos. I. and II. have been published in the Canadian Entomologist.

that the genus *Acanthosoma* does not occur in America at all, the species referred to this genus by the American authors belonging to other genera. That they have not hitherto been correctly located may partly be due to the circumstance that the palearctic genera of this subfamily have been badly mixed up in the catalogue of Lethierry and Severin. By aid of the following characters our species are easily located:

Acanthosoma Curt.—Mesosternal lamina not prolonged backward. Mesosternum at the base behind the lamina a little elevated; the elevated part longitudinally excavated or sulcated (Old World genus).

Elasmostethus Fieb., Stal.—Mesosternal lamina prolonged backward between or behind the middle coxæ. Posterior lateral margins of the pronotum neither depressed nor ampliated. Posterior angles of pronotum obtuse, not projecting backwards. Orificia long, about three times as long as the distance between their apex and the anterior angle of the metasternum.

To this genus belong (1) *cruciatus* Say, (2) *atricornis* V. Duz., (3) *cooleyi* V. Duz., which I have not seen. It is described as a variety of *cruciatus*, but, judging from the description, I think there can be no doubt that it is a different species.

Elasmucha Stal (*Clinocoris Hahn*).—Mesosternal lamina as in *Elasmostethus*. Posterior lateral margins of the pronotum depressed and ampliated. Posterior angles of pronotum angularly projecting backwards. Orificia rather short, less than twice as long as the distance between their apex and the anterior angle of the metasternum.

To this genus belongs (4) *lateralis* Say. The name *Clinocoris* cannot be accepted for this genus, being pre-occupied by Fallén for the bedbug.

According to Distant, *A picicolor* Westw., described from an unknown locality, is a synonym of *lateralis* Say; but Horváth, who has also examined Westwood's type, says that it is the same species as the palearctic *fieberi* Jak. Both these authors may be right, for it is not impossible that *fieberi* will prove to be identical with the nearctic *lateralis*. I have no specimen of *fieberi* here for comparison, and must leave this question unsettled. Distant has described an *Acanthosoma flammata*

from Mexico. From the quite inadequate description it is impossible to say to what genus it belongs, but it is very unlikely that it is an *Acanthosoma*.

IV.—On Two Reduviidæ from British Guiana.

Repipta spinosa Fabr.

Mr. Van Duzee has communicated to me specimens of this (or a very closely allied) species. In describing the types in his "Hemiptera Fabriciana" Stal placed *Zelus spinosus* Fabr. and *sexdens* Fabr. in the genus *Repipta* Stal, but later, when the types were not before him, he removed them to the genus *Corcia* Stal, apparently with some hesitation. They are, however, much better placed in *Repipta*.

Diaditus pilosicornis n. sp.

Testaceous, membrane and inner part of corium pale grayish; the ocelliferous tubercle, the rostrum, two median pronotal vittæ coalescing on the anterior lobe; a sublateral basal streak to scutellum; an abbreviated claval streak; a streak near the inner apical angle of the corium and a shorter outer streak in front of the discoidal cell; two somewhat obscure longitudinal fasciæ to the meso- and metapleura; two elongate spots, the posterior of which is shorter, to the lateral margins of the abdominal segments, and a sublateral ventral vitta, fuscous; a large triangular posteriorly sinuated spot on the discoidal cell; an irregular abbreviated basal streak on the inner basal cell of the membrane; a small basal spot and a broad vitta, sinuated anteriorly and strongly narrowing posteriorly, on the outer basal cell of the membrane, very close to the external margin, velvety brownish black; the other parts of the membrane mottled with pale fuscous; apex of femora and of tibiæ and the tarsi infuscated; head with the apical processes starting from a common base, somewhat reflexed, not quite reaching the middle third of first antennal joint, separated by a very narrow subparallel interstice, with the internal margin straight and the external margin distinctly longitudinally convex; ocelli placed on the outer side of a raised, rounded tubercle, which is longitudinally sulcate in the middle; interocular space on the underside somewhat broader than the rostrum (♂); first joint of antennæ a little longer than the distance between the interocular furrow and the apex of the antenniferous tubercle; glabrous; second joint twice as long as first, longly erectly pilose; third and fourth joints short, finely pilose; fourth longer than third; pronotum rectangular at apex, with two obtuse keels somewhat diverging backwardly in the hind lobe; lateral angles acute, a little raised and distinctly prominent; scutellum horizontal at apex; hemelytra almost reaching the middle of the last dorsal segment (♂); abdomen (♂) with the last dorsal segment rounded, rather broadly and

deeply sinuate at apex; carinated on the under side from its base to the apex of the fifth segment; second male genital segment four times as long as first, sinuate at apex. Length, ♂ 11.5 mm.

Demerara (R. J. Crew).

Akin to *D. hirticornis* Champ., but it is larger; the frontal spines are not divergent; the first antennal joint is much shorter; the lateral angles of the pronotum are more acute and prominent, and the last dorsal segment of the male is differently shaped.

This is the insect referred to by Van Duzee in Trans. Amer. Ent. Soc., 1901, p. 350, as *Narvesus sp.*

N. B.—The allied Australian genus *Agylla* Stal must bear the later name *Thelocoris* Mayr, the first name being preoccupied (Walker, Lepidoptera, 1854).

The Bees of Nebraska.—I.

FAMILY PANURGIDÆ.

Genus **PERDITA** F. Smith.

By Myron H. Swenk and T. D. A. Cockerell.

1. **Perdita albipennis** Cresson.

This species is present over the entire State, specimens from Sioux County, Bridgeport, Haigler, Springview, Carns, West Point, Lincoln and Nebraska City having been examined. It flies from June 23 to September 14, visiting abundantly the flowers of *Helianthus annuus* and allied species, but is to be found on *Solidago, Grindelia* and *Rudbeckia* also.

2. **Perdita lacteipennis** n. sp.

♀.—Length, 9-10 mm.—Head and thorax blue-green, the former element predominating on head and metathorax, the latter on mesothorax, which has also an æneous tinge. Ends of mandibles, a narrow cuneate mark in the middle of the otherwise unmarked, shiny and sparsely punctured clypeus, a quadrate mark on each side of the face between the clypeus and the eye, a line on scape in front, a line on prothorax, a very large spot on tubercles, all of the knees and a broad stripe down the front of anterior tibiæ, yellow. Flagellum reddish testaceous beneath. Wings milky white, nervures and stigma pallid. Tegulæ pale. Abdomen black, the first segment with a large spot on each side, segments 2-5 crossed by very broad yellow bands, the first two sub-basal, oblique, and strongly notched on the posterior margin (sometimes completely narrowly interrupted), the last two submedian, trans-

verse and continuous. Pygidium brown. Pubescence of head and thorax short, erect and white, densest on the cheeks and pleura, grayish white on the legs, the hair on last three abdominal segments and the ventral fringe ochraceous gray.

♂.—Length 8-9 mm.—Black, the head and thorax strongly reflecting blue, only the mandibles, a narrow line on front of scape, knees and a variably-sized stripe on anterior tibiæ yellow; tarsi brownish; pygidium abruptly yellow; apical margins of the segments depressed, impunctate, steely.

Types: Pair taken in copula, Niobrara, Nebraska, August 13, 1902, on *Helianthus annuus* (M. H. Swenk). There are also 49 female and 71 male paratypes from Long Pine, Carns, Neligh, Springview, Glen, Crawford, Warbonnet Canon, Imperial and Haigler, Nebraska, thus representing the entire northwestern half of the State. While most frequent on *Helianthus,* this species visits also, but not frequently, the flowers of *Rudbeckia, Petalostemon violaceus, Campanula petiolata, Medicago sativa, Carduus altissimus* and *Verbena* sp. It flies from June 23 to August 25.

Perdita lacteipennis is quite close to *P. albipennis,* but differs at once in its larger size and in a reduction of the yellow markings. The male of *albipennis* may easily be told by its yellow markings on clypeus and sides of face (completely lacking in *lacteipennis*), much broader stripe on front of scape and on anterior tibiæ, larger knee spots, more yellowish flagellum and yellow tarsi; the female of *albipennis* has the apical margin of the clypeus yellow, in addition to the median cuneate mark, more yellow on scape and legs, and much narrower abdominal bands. One would be inclined to consider it merely a variety of *albipennis* were it not for the fact that in western Nebraska both species occur together and are yet perfectly distinguishable, *lacteipennis* running out eastwardly so that *albipennis* occurs alone in eastern Nebraska.

3. **Perdita laticincta** n. sp.

♀.—Length about 5 mm.—Head and mesothorax brassy-green, the prothorax and metathorax blue. Clypeus black, with a large subpyriform yellow spot occupying most of the median area, the sides of face between the clypeus and eye with a small quadrate yellow spot, which sometimes extends up a short distance along the orbit, the mandibles and a spot on tubercles also yellow. Scape in front and flagellum

below yellowish. Tegulæ yellow. Wings milky white, the nervures and stigma pallid. All of the knees and the front face of the anterior tibiæ yellow, legs otherwise brownish black. Abdomen brownish black, all of the segments except the last, crossed by very broad, subbasal, yellow bands, the first three notched medially on the posterior margin. Pygidium and venter brownish black. Pubescence short, erect, pure white, densest on cheeks, pleura and as fringes on the last three abdominal segments.

♂.—Length 4-5 mm.—Mandibles, labrum, a line half way up posterior margin of eye orbit, clypeus, supraclypeal area, sides of face in a broad line extending far beyond insertion of antennæ and ending truncately, scape and all except a portion of upper surface of flagellum, deep yellow, the dog's-ear marks contrastingly black. A line on prothorax extending to large spots on the tubercles, yellow. All the knees, the front face of all the femora and of first four tibiæ and anterior tarsi within yellow. Abdomen five-banded as in ♀, the two last segments dark. Otherwise like ♀.

Types: Glen, Sioux County, Nebraska, August 20, 1906, on *Helianthus petiolaris* (H. S. Smith), ♀ ♂.

Paratypes: 23 ♀ ♀ and 49 ♂ ♂ from the type locality, Warbonnet Canon, Crawford, Niobrara and Neligh, Nebraska.

This species flies from July 12 to August 24, and though primarily a visitor of *Helianthus*, it occasionally strays to the flowers of *Solidago missouriensis* and *Melilotus alba* also. It is very distinct in its markings and has no close relative. In the tables of *Perdita* in Proc. Phil. Acad. Nat. Sci. the ♀ runs to *bigeloviae* and the ♂ to *sphaeralceae* var., but it is not either of those.

4. **Perdita nebrascensis** n. sp.

♀.—Length 6 mm.—Head, prothorax and mesothorax æneous green marked with yellow, the metathorax abruptly blue. A basal trilobate clypeal mark (the lateral lobes being very small and short, the median one large and broad), the supraclypeal area, subtriangular lateral facemarks running up contiguous to the orbits and terminating acutely just beyond level of insertion of antennæ, spot at base of mandibles, whole scape and the flagellum beneath, a large spot on tubercles, first four tarsi, their tibæ inside and below, and all the knees, yellow. Tegulæ yellow. Wings hyaline, their nervures dark, the stigma pale centrally. Abdomen black, the middle of segment 1 with a narrow, medially interrupted yellow band, the base of segments 2-5 with similar narrow transverse bands, continuous but not attaining the lateral margins of the segments, the last one very narrow, the pygidium pale. Venter

brown, the segments broadly edged with testaceous. Pubescence all pure white, longest on cheeks, pleura and tip of abdomen.

♂.—Length 5.5-6 mm.—A streak contiguous to lower half of posterior orbits, mandibles, labrum, whole of face up to one-third the distance between insertion of antennæ and anterior ocellus, and farther laterally, whole of antennæ except a dorsal spot on pedicel, a line on prothorax connecting with the spot on tubercles, four anterior legs except broad lines on tibiæ and femora behind, posterior coxæ, trochanters, femora in front and all the knees, bright yellow. Abdomen with yellow bands in middle of 1 and bases of 2-5, broader than in ♀, usually all medially interrupted or notched, the last ones broadly so, segment 6 dark, venter pale yellowish. Otherwise like the ♀. Head round, face and whole of thorax hairy.

Types: Neligh, Nebraska, August 7, 1901, on *Helianthus* (M. Cary), ♀ ♂.

Paratypes: 14 ♂ ♂; type lot, 9 ♂; type locality, July, 3 ♂; Niobrara, Nebraska, August 13, 1902, on *Helianthus* (W. D. Pierce), 2 ♂.

This species is most closely allied to the recently described *P. dallasiana* Ckll., but differs from that species in larger size, deep yellow of face, less yellow on cheeks, no yellow marks on pleura and different abdominal markings. It looks much like *P. sphaeralceae* Ckll., especially the abdomen, but the head and thorax are quite different. The female runs in the tables to *P. bigeloviae* var., but is not that species.

5. **Perdita dolichocephala** n. sp.

♀.—Length, 6 mm.—Head and mesonotum dark metallic green, strongly and densely punctured, the prothorax, metathorax and pleura dark metallic blue and much more finely punctured. Face unusually long and narrow, with the inner margins of the orbits subparallel. Clypeus very sparsely and shallowly punctured, typically with a large median subpyriform area and lateral margins expanding into a spot in the lower corners, pale creamy yellow, but sometimes entirely black. Typically, also, with yellow lateral face marks running up along the orbits to terminate truncately at level of antennæ and below swollen into a large spot, but these also sometimes lacking. Mandibles usually yellow, sometimes black, labrum always black. Antennæ dark, sometimes yellow for a short distance at extreme base. Tegulæ pale, the wings clear and with pale nervures and stigma. Legs blackish except the anterior knees and inner surface of anterior tibiæ, which are yellow. Abdomen varying from black to brownish-black, the bases of the first three segments typically with two short yellow marks, one on each side, marking the rudiments of a semi-obsolete, widely inter-

rupted band, these marks sometimes entirely absent. Venter black. Cheeks, occiput, pleura, legs and last three abdominal segments with long, erect, pure white hair, the clypeus, face and mesonotum with shorter and thinner pubescence.

♂.—Unknown.

Type: Warbonnet Canon, Sioux County, Nebraska, July 23, 1901, on *Helianthus* (M. A. Carriker, Jr.), 1 ♀.

Paratypes: Niobrara, Nebraska, August 13, 1902, on *Helianthus* (W. D. Pierce), 2 ♀.

The three specimens placed here differ widely in their face and abdominal markings, but on close study prove to be but variations of a single very distinct species, characterized by the long head, which is suggestive of *Conanthalictus*. The type has well-developed face marks and abdominal marks, but one of the paratypes completely lacks all trace of face markings and has even better developed abdominal marks than the type, while the other paratype has the face marked like the type, but lacks any abdominal marking.

6. **Perdita fallax** Cockerell.

This species has been taken only in Sioux County, where it flies from June 27 to August 19, visiting a small species of *Helianthus* and also, though less commonly, *Gutierrezia sarothrae*. A series of 14 females and 15 males was collected in Warbonnet Canon, July 12, 1901, on a small *Helianthus*, and the occurrence of so many at the same time on the same flowers leaves no doubt as to the correct matching of the sexes. The females, while not typical, are so close to *fallax* that no separation from that species can be justified, while the males prove to be unquestionably the same as the type of *P. erigeronis* Ckll., known only in the male, and described from Mesilla Valley, N. M., at *Erigeron*, in May. *P. erigeronis* Ckll., then, must be considered as the unknown male of *P. fallax* Ckll.

7. **Perdita affinis** Cresson.

West Point, Cedar Bluffs and Nebraska City, Nebraska, August 30 to September 12, uncommon at flowers of *Solidago rigida*, and, late in the season, on *Aster*.

8. **Perdita bruneri** Cockerell.

Lincoln and West Point, Nebraska, August 6 to September

12, abundant on *Solidago rigida* and *Grindelia squarrosa*, especially the former.

9. **Perdita cockerelli** Crawford.

Lincoln, West Point, Broken Bow and Sioux County, Nebraska. In Sioux County it flies during August or longer, visiting the flowers of *Solidago missouriensis*. In eastern Nebraska it flies from August 6 to October 6, almost exclusively on *Grindelia squarrosa*, but also, rarely, on *Aster* late in the season. This species is not nearly so common as *bruneri*, which it so much resembles.

10. **Perdita crawfordi** Cockerell.

Lincoln, Nebraska, August 22 to September 1, abundant at flowers of *Grindelia squarrosa*, rarely straying to *Helianthus annuus* also. Strangely, this species has never been taken away from the environs of the salt flats west of Lincoln.

11. **Perdita ignota** Cockerell.

No additional specimens of this species have been captured since the one recorded from Lincoln in September, in Ent. News, viii, p. 24. It has been taken by Messrs. C. R. Jones and W. D. Pierce at Clarendon, Texas, at flowers of *Grindelia squarrosa*.

12. **Perdita punctata** Cockerell.

Also known from Nebraska only through the one ♀ specimen captured at Lincoln in September, and recorded with *ignota*.

13. **Perdita maura** Cockerell.

Lincoln, West Point and Cedar Bluffs, Nebraska, July 27 to October 1; at flowers of *Physalis*, and, late in the season, on *Aster*.

14. **Perdita gutierreziae** Cockerell.

Four females and twenty-four males collected August 18 to 22, 1906, at flowers of *Gutierrezia sarothrae* at Glen, Sioux County, Nebraska. The female of *gutierreziae* has never been described, and is exceedingly similar to *P. rhodura* Cockerell, but the male of *rhodura* is quite distinct from that of *gutierreziae*.

15. **Perdita melanostoma** n. sp.

♀.—Length, 5.5 mm.—Head dark green, changing to greenish blue on occiput and cheeks, and to deep black on the clypeus, the mesonotum æneous green, with remainder of thorax deep blue. Usually a round yellow spot on each side of clypeus, and mandibles more or less completely yellow. Antennæ brownish black, the flagellum yellowish beneath. Legs black, with all the knees, first four tibiæ in front, and the anterior tarsi, yellow. A small spot on tubercles, whole of tegulæ and bases of the wings yellow. Wings clear, nervures blackish, stigma brownish fuscous. Abdomen black, the middle of segment 1 and bases of 2-4 with broad, narrowly medially interrupted or notched, transverse yellow bands. Venter fuscous. Cheeks, mesonotum, pleura, legs, last two abdominal segments above, and whole of venter with peculiar, sparse, very erect, bristle-like and heavy, pure white pubescence, long only on abdomen tip and posterior legs.

♂.—Unknown.

Type: Glen, Sioux County, Nebraska, August 19, 1906, on *Gutierrezia sarothrae* (P. R. Jones), ♀.

Paratypes: 25 ♀ ♀ from type locality, August 18-22, 1906, on *Gutierrezia sarothrae.*

This species runs out near *P. subfasciata* and *sphaeralceae,* but is neither; the former has the whole head and thorax dark bluish green, almost black, and the mandibles wholly dark, and flies at flowers of *Chrysothamnus.*

16. **Perdita luteola** Cockerell.

Thirty-eight females and nineteen males, August 12-22, 1906, on *Gutierrezia sarothrae* at Glen, Sioux County, Nebraska.

17. **Perdita perpallida** Cockerell.

The co-types of this species, taken at Neligh, Nebraska, in July (M. Cary), at flowers of *Petalostemon violaceus,* are the only specimens so far captured.

18. **Perdita wootonae** Cockerell.

This species flies in abundance in northwest Nebraska, visiting exclusively the flowers of *Nuttalia nuda* from July 28 to August 22. A series of over 250 specimens from Crawford and Glen shows that the male is dimorphic, some specimens having very small, round, unarmed heads, while others have enormous, heavy heads with strong cheek spines. These two extremes intergrade. The type of *wootonae* has black tarsi, but this character is variable and all the Nebraska specimens examined have the tarsi pale. The pleural spot is also variable

in size, and is frequently entirely lacking, so that this character cannot be depended upon to separate *wootonae* from *perpallida*. However, *perpallida* has the second submarginal cell more narrowed above and is of a paler color generally, lacking the greenish tinge to the scutellum, metathorax and pleura which makes these parts contrast with the mesonotum and vertex in *wootonae*. The two are very close and may not be specifically distinct, but the difference in the flowers visited would argue for their separation.

19. **Perdita zebrata** Cresson.

Glen, Crawford, Bridgeport and Gering, Nebraska, July 28 to August 22, at flowers of *Cleome serrulata, Helianthus petiolaris* and *Solidago missouriensis.* On close examination of a series of nearly 200 specimens the supposed external distinctions between *P. zebrata* and *P. bakerae* break down; the genitalia characters have not been further investigated.

20. **Perdita stottleri flavida** n. subsp.

♀.—Length, 7 mm.—Similar to *P. stottleri*, but larger, with the light parts of the abdomen canary yellow instead of cream color, the dark parts of the head and thorax æneous green instead of bluish green, and the hind femora entirely yellow, lacking the large black mark of typical *stottleri*.

♂.—Differs from the ♂ of *stottleri* by the æneous green instead of bluish green color of the head and thorax and the presence of a black mark on the hind tibiæ.

Type: Glen, Sioux County, Nebraska, August 22, 1906, on *Gutierrezia sarothrae* (L. Bruner), ♀, ♂.

Paratypes: Type lot, 3 ♀♀ and 2 ♂♂; type locality, August 17, 1906, on *Solidago missouriensis* (P. R. Jones, 1 ♂.

This subspecies is quite near to *P. stottleri* Ckll., which was described from Tularosa Creek at edge of Mescalero Reservation, New Mexico, and which also visits *Gutierrezia*, but differs from the type as above, apparently representing a valid subspecies.

Of the above twenty species, eleven have their type localities in Nebraska, five were originally described from New Mexico, three from Colorado, and one from New Mexico and Colorado. There are also before us five unique male Perditas from Nebraska, some of which are apparently new, but their naming is deferred until the accumulation of additional material.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., FEBRUARY, 1907.

Entomologists in general are desirous of having their collections named, and in many cases do not know the persons studying special groups to whom they could apply. We have thought it would be useful to publish the names of those persons who are willing to do this work. We will also be pleased to hear from specialists who are willing to send in their names for this purpose, and we will publish them in our next issue. The NEWS assumes no responsibility in this matter, and all details should be arranged between the collector and the persons making the determinations.

The following persons will be pleased to name the groups mentioned:

Mr. William Beutenmüller, American Museum of Natural History, 77th St. & 8th Avenue, New York, N. Y. Cynipidæ and *Catocala*.

Professor Herbert Osborn, Ohio State University, Columbus, Ohio. Homoptera.

Professor E. A. Smyth, Jr., Virginia Polytechnic Institute, Blacksburg, Virginia. Sphingidæ of the world.

Dr. Henry Skinner, Academy Natural Sciences, 1900 Race Street, Philadelphia, Penna. North American Butterflies (Expanded).

Dr. Philip P. Calvert, Academy Natural Sciences, 1900 Race Street, Philadelphia, Penna. Odonata.

J. A. G. Rehn, Academy Natural Sciences, 1900 Race Street, Philadelphia, Penna. Orthoptera.

This list should be greatly increased, and we hope to get many names. We could add more now, but don't like to do so without permission.

Entomological Literature.

THE ALEOCHARINÆ BY CASEY.—The Academy of Sciences, of St. Louis, has lately published a paper from the pen of Major Thomas L. Casey with the title "Observations on the Staphylinid Groups Aleocharinæ, etc." A few criticisms of this paper are offered here.

Page 144. *Aleochara fuscipes* Gravh. is synonymous with *curtula* Goeze. Specimens so identified are in my collection from Colorado, Illinois, and West Virginia.

Aleochara lustrica Say is a variety of *curtula* Goeze.

Aleochara lateralis Heer is synonymous with *crassicornis* Boisd., Lac.

Page 147. *Aleochara* (*Xenochara*) *puberula* Klug is a cosmopolitan species. I have a specimen from Pasadena.

Aleochara milleri Kr. is a true *Baryodma*.

Page 152. *Aleochara castaneipennis* Esch. should read Mannh.

Poge 158. *Aleochara* (*Baryodma?*) *densiventris* Casey. The specific name is pre-occupied. Dr. M. Bernhauer described a Californian species under this name (Deutsche Ent. Ztschr., 1906, Heft ii, p. 146). Major Casey writes me that he himself has discovered this synonomy.

Page 160. *Aleochara* (*Baryodma*) *nitidicollis* Casey is also pre-occupied by Solier (Gay, Hist. Chil. iv, 352). Fauvel believes that the species so named by Solier belongs in the genus *Homalota*(*?*).

Page 162. *Aleochara cuniculorum* Kr. belongs in the subgenus *Rheochara* (teste Bernhauer).

Page 163. *Aleochara bipunctata* Ol. is synonymous with *bipustulata* L.

Page 164. *Aleochara nitida* Gravh. is synonymous with *bipustulata* L.

Page 165. *Aleochara languida* Gravh. should read Sachse. It is either identical with *verna* Say or a variety of the same.

The five species created by Major Casey at the cost of *Aleochara sulcicollis* Mannh. are local forms of a very variable species hardly worth naming.

Page 182. *Aleochara* (*Polychara*) *graciliformis* Fauv. in litt., is *gracilicornis* Brnh. (Stett. Ent. Ztg., 1901, 372), and is described from Massachusetts. It occurs also in Canada (teste Harrington), Sparman Lake, Ont. (teste Hamilton), and Mount Washington (teste Slosson).

Page 191. The width of the abdomen of *Trachyota lativentris* Casey is given as 7.2 mm., a typographical error.

Page 244. *Falagria* (*Lorinota*) *gracilis* Casey is said to visit pines, an accidental habitat, as Falagroid species occur mostly near water. *Lorinota* will probably prove to be identical with *Falagria*, and the species *gracilis* Casey will have to receive another name (*vide gracilis* Motsch. from India).

The above remark applies also to *Falagria* (*Lorinota*) *parva* Casey, *vide parva* Kr. from Ceylon.

Page 259. *Falagria vaga* Lec. is a *Myrmecopora*.

Page 267. *Stictalia arcuata* Casey. *Stictalia* will probably prove to be

identical with *Bolitochara*, and the species *arcuata* Casey will have to receive another name (*vide arcuata* Fvl. from Chile).

Page 273. *Venusa blanchardi* Casey is a synonym of *Bolitochara picta* Fvl.

Page 279. *Diestota mayeti* M. & R. is a synonym of *testacea* Kr.

Page 282. *Eumicrota humeralis* Casey. *Eumicrota* will probably prove to be identical with *Gyrophæna*, and the species *humeralis* Casey will have to receive another name (*vide humeralis* Shp.).

Page 287. *Phanerota angularis* Casey. See above remark (*vide Gyrophæna angularis* Epp. from West Africa).

Page 291. *Gyrophæna flavicornis* n. sp. is a typographical error, and should read Melsh.

Page 315. *Oxypoda ancilla* Casey. The specific name is pre-occupied; *vide O. ancilla* J. Sahlb. Sv. Vet. Akad. Handl. xvii, 86, 1880-81. I change the name of the species to *dubia*.

Page 322. *Drusilla* Leach is pre-occupied; *Astilbus* Steph. takes its place.

Page 336. *Macroterma borealis* Casey. This genus will probably not stand, and *borealis* is pre-occupied by *Atheta borealis* Sahlb = *atramentaria* Gyllh.

Atheta (*Homalota*) *granulata* Mannh. Mannerheim described the species as an *Aleochara*, and not as a *Homalota*; *granulata* is identical with *graminicola* Gravh. The generic name *Elytrusa* is superfluous.

Page 351. *Leptusa tricolor* Casey. The specific name *tricolor* is pre-occupied by Scriba for a species from Spain (Scriba, Heyd. Sp. 75). I change the name of the species to *caseyi*.—A. FENYES, M. D.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

I HAVE taken the liberty of writing you on this occasion concerning a matter which I feel sure will be of interest to you and worthy of your consideration.

This is in relation to the forming of an entomological club here in Southern California. The time is surely at hand when an organization of this nature should meet with success. Within the past few days a number of enthusiasts in this line have assembled and discussed the matter in question, and they are all of the opinion that the project will surely carry.

The names of those interested in entomology in and about Los Angeles have been listed, and notices will be sent out to all with the hopes of their becoming interested in the matter, and so much so that they will attend the first meeting for organization, to be held at my residence, 1410 South Burlington Avenue, on the evening of Thursday, January 17, at eight o'clock.—E. K. HARVEY.

No one has done more to advace our knowledge of Central American insects than Mr. G. C. Champion, now of Horsell, Woking, England, who has not only made large collections in all orders for the *Biologia Centrali Americana*, but has also described important sections of the Coleoptera and the Heteroptera in that work. The Editors of the NEWS therefore take much pleasure in presenting to our readers, on another page of this issue, an itinerary of his travels, which Mr. Champion has kindly prepared at our request.

IF YOU lack a number of *Entomological News*, dont wait four or five years to ask for it as your chances of getting the number will be very small. The demand for the NEWS has been very great and back volumes are rapidly exhausted. If you do not get your copy send a postal to the NEWS at once.

I WOULD like to see some more on Noctuidæ within the NEWS. Couldn't you prevail on somebody to write some articles on the life histories of our eastern Plusias especially the larval stages and food plants?

—EDWARD D. KEITH, Providence, R. I.

LAST October my father brought me nine specimens of *Vanessa j album* from Norfolk Conn. He said he had seen a number of them around the hotel, some of them tapping against the windows as if they desired to winter there.

Last summer there was found here a pecular looking caterpillar. It was yellow with the oblique bands pink. It was evidently *C. juglandis*, for when it changed to a chrysalis it was exactly like other *C. juglandis* pupæ.—KATE W. STRONG, Setauket, Long Island, N. Y.

THE initial meeting of the Entomological Society of America was held in the American Museum of Natural History at New York City, December 28, 1906.

On the evening of December 28, Prof. Wm. M. Wheeler delivered before the society an illustrated lecture on "The Polymorphism of Insects." Immediately after the lecture occurred the business meeting. Prof. J. H. Comstock of Ithaca, N. Y. was elected chairman and E. S. G. Titus of Washington, D. C. secretary of the meeting. The new society then adopted a constitution and by-laws and elected officers and members of the executive committe.

The following are the officers: President, J. H. Comstock, Ithaca, N. Y. 1st Vice-President, James Fletcher, Ottawa, Can., 2nd Vice-President, Henry Skinner, Philadelphia, Pa., Secretary-Treasurer, J. Chester Bradley, Berkeley, Cal.

The Executive Committee consists of the officers and the following fellows: Wm. M. Wheeler, New York, N. Y., John B. Smith, New Brunswick, N. J., Herbert Osborn, Columbus, O., C. J. S. Bethune, Guelph, Ont., F. M. Webster, Washington, D. C. and Chas. W. Johnson, Boston, Mass.

Following the business meeting was a smoker at the Hotel Endicott

given by the Newark, Brooklyn and New York Entomological Societies to the Association of Economic Entomologists and the Entomological Society of America.

The executive committee at a meeting held December 29th, decided to call a meeting of the society at Boston, Mass., in connection with the meetings of the International Zoological Congress in August, 1907. Fuller announcement will be made later.

The dues of the new society are one dollar a year and all persons *interested in entomology* in "The Americas" are invited to apply for membership. The membership now exceeds two hundred and fifty.

The American Association for the Advancement of Science granted affiliation to the new society at their New York meeting.—E. S. G. TITUS, *Secretary*.

A PARASITE OF THE MAPLE LEAF-STEM BORER, *Priophorus acericaulis* MAC GILLIVRAY.—In the November number of the NEWS, Dr. W. E. Britton in his account of the maple leaf-stem borer or sawfly, *Priophorus acericaulis* Mac Gillivray and its occurence in Connecticut, mentions the fact that this was undoubtedly the species found by Dr. J. B. Smith in New Jersey. This was the case and with us the insect was very local occuring on only a few trees in South Orange as may be seen by referring to the reports of the New Jersey Agriculture Experimental Station. Our experience with the insect was similar to that recorded by Dr. Britton, except that we did not breed out the adults. We did rear, however, some half dozen examples of a parasite not recorded as infesting this insect and not mentioned by Dr. Britton unless it is one he refers to as resembling *Pteromalus*. This was sent to Dr. Ashmead who determined it as *Sympiesis quercicola* Ashm. The parasites emerged on June 16.—EDGAR L. DICKERSON.

INSECTS GATHERING ON STRAW FLOWERS.—While in the vicinity of Bridgeton, N. J., September 11, 1906, my attention was called by the grower to a small patch of straw flowers which were infested with insects. This plant is a species of Compositæ and the flowers which are greenish in color, are used for winter decorations, etc. Upon examining the patch I found a number of specimens of *Tragidon coquus* Lec. many of which were in copulation. They apparently were not feeding but had gathered on the plants for the purpose of copulation. Besides these, a number of specimens of *Euphoria inda* L. and *sepulchralis* Fabr. were feeding upon the succulent stems of the plants and the sap or juice exuding at these injured places had attracted a few specimens of *Ips fascialus* Oliv. Numerous insects of various orders were observed about the plants or on the blossoms and among them *Lebia grandis* Hentz, *analis* Dej. and *Brachyacantha 4-punctata* Melsh. resting on the leaves.

The plants were located in one of the rear fields of a rather sandy farm near woodland and owing to the absence of any other plants in bloom, at the time, in the near vicinity, formed the center of attraction for the numerous insects.

I requested the owner to send me such insects as he might find on the plants within the next few days and accordingly received a few more specimens from him. In all I obtained 46 samples of *Tragidion coquus* Lec —all similar in markings, being black with red elytral spots—and a like number of *Euphoria sepulchralis* Fabr. and *inda* L. besides those species already mentained and several more of Coleoptera and other orders.—EDGAR L. DICKERSON.

Doings of Societies.

Meeting of the Cotton Belt Entomologists.

The annual meeting of the Association of Official Entomologists of the Cotton Belt was held at Baton Rouge, La., on November 13th and 14th, in the Agricultural Building of the Louisiana State University.

Entomologists from the North as well as the South were in attendance, the following States being represented: Louisiana, by Wilmon Newell, B. H. Guilbeau, C. W. Flynn, J. B. Garrett, M. S. Dougherty, Harper Dean, A. H. Rosenfeld and R. S. Howell; Mississippi, by Glenn W. Herrick; Alabama, by R. S. Macintosh; Florida, by E. W. Berger; Georgia, by R. I. Smith and W. W. Chase; Tennessee, by H. A. Morgan; Arkansas, by C. F. Adams; North Carolina, by Tait Butler and R. S. Woglum; New Hampshire, by E. Dwight Sanderson; Illinois, by S. A. Forbes; Iowa, by H. E. Summers, and the Department of Agriculture, by W. D. Hunter, W. Dwight Pierce, F. C. Bishopp and W. A. Hooker, of the Bureau of Entomology, and Cooper Curtice and B. H. Ransom, of the Bureau of Animal Industry.

In the absence of the chairman and secretary, Professor Wilmon Newell called the meeting to order and Professor E. Dwight Sanderson and W. A. Hooker were elected chairman and secretary, respectively.

Tuesday's session was devoted to a discussion of the cotton boll weevil. Mr. W. D. Hunter, in charge of the boll weevil investigations of the Bureau of Entomology, opened the meeting, giving an account of the progress made in the boll weevil

investigations during the past year. He spoke of the factors, natural and artificial, that assist in the spread of the weevil; of the studies that have been made on the hibernation; the factors in its natural control and of the observations made on its habits in Guatemala by Mr. E. A. Schwarz, and its adaptation to local conditions in this country.

State Entomologist Herrick spoke on "Mississippi and the Boll Weevil Problem." He does not anticipate greater injury than Louisiana has experienced and proposes that the cultural methods be demonstrated in Mississippi by experimental farms and institute work. He stated that he was in favor of a law compelling the destruction of stalks before frost.

State Entomologist Smith, of Georgia, spoke of the attitude of the people and officials of the Eastern States to the boll weevil problem. He mentioned the interest which had gradually decreased in the last few years was now increasing as the weevil approaches.

Mr. C. W. Flynn, Assistant Entomologist of the Louisiana State Crop Pest Commission, gave an account of the recent changes in boll weevil quarantines in the Southern States and the status of quarantines at present in force. Concerning the situation in Louisiana, it was explained that the quarantine line is extended as made necessary through the dissemination of the weevil. In August, the quarantine in Louisiana was removed, but three weeks later replaced by a demand from the parishes, only cotton seed and seed cotton being quarantined against. Mr. Hunter cited a case, as bearing on the subject, where an infestation in West Texas was found to have been carried in cotton seed by a wagon to a distance of fifty miles. Prof. Herrick stated that in Mississippi quarantine regulations were erroneously omitted from the new code, and consequently that State now has no regulations against the importation of cotton seed from the infested districts. Dr. Adams, State Entomologist of Arkansas, spoke of the proposed quarantine laws of that State.

Mr. J. D. Garrett, Assitant Entomologist of the Louisiana State Crop Pest Commission, presented a paper on the areas covered by the 1906 migration in Louisiana. It has this year entered Arkansas and Indian Territory and is within twenty-

five miles of the Mississippi line. He stated that 64% of the cotton producing area of Louisiana has now been reached as against 31% at the end of 1905, that in the northern portion of the State a forward movement of seventy miles had been recorded the present year.

Mr. W. Dwight Pierce, of the Bureau of Entomology, closed the Tuesday session with an exhaustive paper on the studies made of parasitism of the boll weevil. Mr. Pierce, during the past year, has made a study of the parasites of the Rhyncophora, especially of the boll weevil. He has found from the examination of many thousand infested squares that already in some localities in Texas they are an important factor in the control of the weevil. These he further found to have come from the native weevils, the prevailing parasite varying with the locality.

The Cattle Tick.

Wednesday, the cattle tick, the sole transmitter of Texas fever in cattle, came up for discussion, the session opening with Professor Summers in the chair in the absence of Professor Sanderson. Dr. Cooper Curtice, of the Bureau of Animal Industry, first addressed the meeting, telling of the work of eradication as now carried on by that bureau.

Mr. Malcomb B. Dougherty, Assistant Entomologist of the Louisiana Crop Pest Commission, followed Dr. Curtice, speaking on the results of studies made in connection with the life history at Baton Rouge.

Mr. W. D. Hunter then addressed the meeting and discussed the results of the cattle tick investigation and survey in Texas as carried on by the Bureau of Entomology. He reviewed the progress made in our knowledge of the biology of the tick, referring to Professor H. A. Morgan, who, through his studies of the life history, worked out the system of rotation which now makes eradication practicable. He spoke of the climatic factors which make eradication in the Gulf States quite a different problem from that along the present quarantine line.

Dr. Tait Butler, of North Carolina, who has already cleared no less than ten counties in that State, next addressed the meeting on the work that has been carried on under his supervision.

The many difficulties that arise in the work were mentioned and the ways in which they may be overcome were described.

The secretary read a paper reviewing briefly the study of ticks other than the cattle tick, their transmission of diseases as demonstrated by Lounsbury and others, describing the ticks that have been brought to light recently by the Bureau of Entomology and their biology so far as studied. Some species hitherto unknown in their country, that may transmit disease, were mentioned.

Professor H. A. Morgan, of Tennessee, closed the meeting with an address on "A Review of the Inception and Development of the Cattle Tick Eradication Movement." He discussed the work which brought about an appropriation by Congress for tick eradication. The speaker expressed his confidence in the possibility of complete eradication of the cattle tick through national aid and State co-operation. This he stated will open the stock markets of the North, and as a result stimulate the cattle industry of the South upon which its agriculture is based.

W. A. HOOKER, *Secretary.*

At the meeting of the Feldman Collecting Social, held on the evening of November 28, 1906, at the residence of Mr. H. W. Wenzel, 1523 South 13th Street, Philadelphia, Pa., twelve members were present, and Mr. Kaber, visitor. President Daecke in the chair.

Professor Smith said that the periodical cicada, brood 8, had been due in New Jersey this past summer, and that it had been sought for in different parts of the State, but that it had not put in its appearance. He further stated that our common "dog-day harvest fly" has been erroneously referred to *Cicada tibicen* L., and that it is not *tibicen* at all, and, furthermore, that there are four distinct species, where heretofore it had been supposed that there was but one. Three of these species can be recognized by their song, and they are all generally distributed throughout the State of New Jersey.

Mr. Harbeck exhibited his collection of the genus *Chrysops.*

Mr. Daecke also exhibited his collection of *Chrysops,* which

represented all the species so far known from New Jersey, besides a number of species from other States. He spoke briefly on some differentiating characters of species in this genus. *Chrysops cursim* Whitney he said to be undoubtedly distinct. He handed in the record of *Chrysops sackeni* Hine, taken at Da Costa, N. J., June 3, 1906, as new to the State of New Jersey.

Mr. Laurent spoke about the importance of the "Entomological Society of America," which was discussed by the members and particularly by Dr. Skinner and Prof. Smith.

Dr. Skinner exhibited specimens of *Homoglaea carnosa,* taken at Luzerne County, Pa., and *Matigramma rubrosuffusa,* taken in the Huachuca Mountains, Arizona. The same speaker reported the occurrence in the past summer of *Tibicen septendecim* at Germantown, Philadelphia, Pa.

FRANK HAIMBACH, *Secretary.*

At the meeting of the Feldman Collecting Social, held on December 19, 1906, at the residence of Mr. H. W. Wenzel, 1523 South 13th Street, Philadelphia, Pa., there were eight members present.

Mr. Bland exhibited a specimen of a supposed aquatic parasite, taken from an aquarium, in which the gold fish were dying, supposed to have been caused by the presence of this parasite.

Mr. Wenzel spoke about the color variation in the genus *Phanaeus,* exhibiting specimens from Florida, Wilmington, N. C., and Balsam Mountains. He pointed out that the Florida specimens are metallic-bronze, deeply striated, and those from North Carolina are dull green, the striæ hardly noticeable.

Mr. Harbeck recorded the following species of Diptera, new to the New Jersey list: *Sturmia normula* Van der Wulp., taken at Clementon, May 30, and Trenton, September 7. *Hypostena barbata* Coq., taken at Trenton July 7, also *Chaetona macroptera* Van der Wulp. Habitat, Mexico, taken at Germantown, Philadelphia, Pa., May 21, 1905.

Mr. Daecke reported the capture of *Tabanus typhus* Whitney at Da Costa, on June 4th, as new to the State of New

Jersey. Mr. Daecke also exhibited a specimen of an *Ammophila,* mounted in a sleeping position, taken in this position in the evening at Willow Grove, Pa.

Mr. Haimbach exhibited specimens of a pink variety of *Haematopsis grataria;* also specimens of *Blepharomastix stenialis* Guen and *Geshna primordialis* Dyar, which two species had until recently been lumped in collections under the name of the former.

A paper on Insect Life in Florida Caves, by the late H. G. Hubbard, was read.

FRANK HAIMBACH, *Secretary.*

Minutes of the Brooklyn Entomological Society, Brooklyn, N. Y.

Meeting of March 1st, 1906. President Dr. J. L. Zabriskie in the chair and seven members present.

Dr. Zabriskie addressed the society on "Microscopical Examinations of External structures of Hemipterons Insects of Genera Anasa and Lygaeus." The remarks related chiefly to curious structures which are to be seen after suitable bleaching and microscopical mounting of dissections of the insect, and found in connection with the antennae, mouth parts, legs, pronotum, coxae and wings. The address was illustrated by thirty-nine lantern slides of his own preparation, which comprised etchings on sheet-gelatine, tracings of sketches through the camera-lucida, from microscopical mounts of his own dissections.

GEO. P. ENGELHARDT, *Secretary.*

Meeting of April 5th, 1906. The President Dr. J. L. Zabriskie presided with twelve members and one visitor present.

Mr. Robert W. Dougherty of Brooklyn, N. Y. was elected a member.

Mr. Franck read a paper announced under the title of "The Most Advantageous Method of Collecting in the Elevated Regions of Placer and Plumas Counties, California", illustrated by specimens. His point, that it is more advantageous to collect in one locality throughout a season, than to move about

to different localities and altitudes, he showed by comparing the results of two collectors. Commencing at an altitude of 2500 feet he gradually worked up to an elevation of 6500 feet until June when he left for Plumas Co., where he collected at an altitude of 11500 feet. Of the three shipments received by Mr. Franck the second and third shipment represented for the greater part insects contained in the first shipment, the repetition of species showing a seasonal retardation corresponding with the altitude in which they were collected. About 200 species of lepidoptera were taken. The following insects were among those selected to illustrate the subject and were taken in all the localities and altitudes visited by the collector :—

Hepialus lenzi, *Axenus arvalis*, *Melideptria villosa*, *Syneda edwardsi*, *Heliothis phlogophagus*, *Annaphila decia*, *Heliaca diminutiva*, *Hemaris thetis*, *Plusia californica*.

The second collector remained in one locality near Colorado Springs, Colorado, from May 15th to the end of August, and while his catch did not exceed in number of specimens that of the first collector, he secured 531 species.

GEO. P. ENGELHARDT, *Secretary*.

Meeting of May 3rd, 1906. The President Dr. J. L. Zabriskie presided with twelve members and one visitor present.

Prof. Smith, on behalf of the glossary committee, submitted a galley proof of the "*Glossary of Entomology*" for the inspection of members and reported that the book will contain about 150 printed pages and in addition several plates of illustration. The price per copy was voted by the society to be $2.00.

Mr. Chas. Westphal of Brooklyn, N. Y. was elected a member.

Mr. Roberts spoke on the waterbeetles belonging to the Haliplidae and he exhibited all the described species, save one unknown to him, and nine new species with manuscript names. In describing his methods for determining species he called particular attention to the shape and incrassation of the front and middle tarsi of the males, which are simple in the females and are characters not heretofore used. Other characters mentioned were the markings on elytra, and the shape of the

coxæ, plates and prosternal process and variations in the formation of the metasternum.

Mr. Roberts also explained his method of mounting small specimens of Coleoptera on card points. He recommended points not too finely tapered and the use of the best white shellac and highest proof alcohol. The specimens should be dry, the shellac applied thinly and the points bent slightly downward, so that one side of the specimen can be placed on the point, leaving the other side and middle clear.

Prof. Smith called attention to the 17 year cicada due to occur this year in some sections of New York and New Jersey and asked the members to report their observations.

GEO. P. ENGELHARDT, *Secretary*.

Meeting of June 7th, 1906. The Vice-President, Mr. E. L. Graef presided with eleven members and one visitor present.

Mr. Davis reported that at the joint field meeting of the New York and Brooklyn Entomological Societies on May 30th at Great Notch, N. J., fair collecting, beautiful weather and delightful scenery combined to make the day enjoyable to all participants.

Mr. Franck exhibited a crippled but living specimen of *Chelepteryx collesi* from Australia and the cocoon from which it had emerged. The wings of the moth had not expanded, thus showing more clearly the enormous size of its body. The large oval cocoon was constructed of coarse silk, bristling with with the stiff hairs of the caterpillar, which caused considerable irritation by adhering to the skin when touched.

GEO. P. ENGELHARDT, *Secretary*.

Meeting of October 4th, 1906. The Vice-President Mr. E. L. Graef in the chair and thirteen members and one visitor present.

Mr. Graef read a paper on "Reminiscences of some Brooklyn Entomologists." He spoke of the great difficulties experienced by him and his contemporaries, A. R. Grote and Frederick Tepper, in getting their specimens named when commencing their collections about fifty years ago, as then only few books

on American insects were extant and very few people in Brooklyn were interested in Entomology. He dwelt on his acquaintance with Stephen N. Calverly, Herman Strecker, J. A. Lintner, Rev. John G. Morris, W. K. Morrison, W. V. Andrews, John Akhurst, and the genial Harry Edwards and in this connection mentioned many incidents of historic interest. The organization of the Brooklyn Entomological Society was chiefly effected by the efforts of F. G. Schaupp and Mr. Graef.

That Mr. Graef's interesting paper should be published in printed form was the sentiment of all members present.

Mr. Weeks exhibited specimens of the 17 year cicada collected in June at Yaphank, L. I., in the same locality where he remembers that they were exceedingly abundant in the year 1855, or just 51 years ago.

GEO. P. ENGELHARDT, *Secretary.*

Meeting of November 1st, 1906. The President, Dr. J. L. Zabriskie, presided with eleven members and one visitor president.

Following a report by Prof. Smith, the motion by Mr. Weeks was approved: that the report of the Glossary Committee be accepted, the recommendations adopted and the committee discharged with thanks. In recognition of valuable assistance in connection with the Glossary of Entomology, John Grossbeck, Dr. Folsom, Dr. Calvert, Dr. Skinner, Prof. Johnson, and Nathan Banks have each been presented with one copy. Mr. George Franck was appointed sales agent of The Glossary.

Frederic M. Schott, W. F. Bather and J. J. Levison, all of Brooklyn, N. Y., were elected members.

Some causes of the extraordinary increase of insect life and species in the vicinity of cities:—(*a*) destruction of birds, (*b*) extensive variety of vegetation, as presented by Mr. Weeks, furnished a subject for general discussion by the society.

Mr. Roberts obtained *Hydroporus arcticus* from Hopedale, Labrador, the first record of this European beetle from North America.

GEO. P. ENGELHARDT, *Secretary.*